

WHAT IS CLAIMED IS:

- 1 1. An apparatus for transmitting a waveform reflecting a time-varying magnetic resonance radio
2 frequency signal comprising:
3 (a) a waveform generator, wherein the waveform generator uses data reflecting the time-
4 varying magnetic resonance radio frequency signal to generate a waveform having a time-
5 varying property; and
6 (b) a signal transmitter that transmits the waveform having the time-varying property to a
7 magnetic resonance scanner.
- 8 2. The apparatus of claim 1, wherein the waveform generator comprises a control device.
9 3. The apparatus of claim 2, wherein the control device is a computer.
10 4. The apparatus of claim 1, wherein the waveform generator comprises a base-band or
11 intermediate frequency generator and modulator, or a digital frequency synthesizer.
12 5. The apparatus of claim 1, wherein the time-varying property is amplitude, frequency, or phase.
13 6. The apparatus of claim 1, wherein the signal transmitter is an antenna or cable.
14 7. The apparatus of claim 1, further comprising a magnetic resonance scanner.
15 8. The apparatus of claim 1, further comprising a keyboard.
16 9. The apparatus of claim 1, further comprising a monitoring device that records operating
17 parameters of a magnetic resonance scanner or free induction decay signals.
18 10. The apparatus of claim 9, wherein the monitoring device is a digital or analog signal recorder.
19 11. An apparatus for transmitting a waveform reflecting a magnetic resonance radio frequency
20 signal comprising:
21 (a) a storage medium that stores data reflecting the magnetic resonance radio frequency signal;
22 (b) a waveform generator, wherein the waveform generator uses data reflecting the magnetic
23 resonance radio frequency signal to generate a waveform; and
24 (c) a signal transmitter that transmits the waveform to a magnetic resonance scanner.
25 12. The apparatus of claim 11, wherein the storage medium is random access memory, a magnetic
26 storage medium, or an optical disk.
27 13. The apparatus of claim 11, wherein the waveform generator comprises a control device.
28 14. The apparatus of claim 13, wherein the control device is a computer.
29 15. The apparatus of claim 11, wherein the waveform generator comprises a base-band or
30 intermediate frequency generator and modulator, or a digital frequency synthesizer.

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- 31 16. The apparatus of claim 11, wherein the signal transmitter is an antenna or cable.
- 32 17. The apparatus of claim 11, further comprising a magnetic resonance scanner.
- 33 18. The apparatus of claim 11, further comprising a monitoring device that records operating
- 34 parameters of a magnetic resonance scanner or free induction decay signals in the storage
- 35 medium.
- 36 19. The apparatus of claim 18, wherein the monitoring device is a digital or analog signal recorder.
- 37 20. An apparatus for transmitting a waveform reflecting a magnetic resonance imaging signal
- 38 comprising:
- 39 (a) a waveform generator, wherein the waveform generator uses data reflecting the magnetic
- 40 resonance imaging signal to generate a waveform having a time-varying property;
- 41 (b) a signal transmitter that transmits the waveform having the time-varying property; and
- 42 (c) a magnetic resonance scanner that receives the waveform and uses it to produce an image.
- 43 21. The apparatus of claim 20, wherein the waveform generator comprises a control device.
- 44 22. The apparatus of claim 21, wherein the control device is a computer.
- 45 23. The apparatus of claim 20, wherein the waveform generator comprises a base-band or
- 46 intermediate frequency generator and modulator, or a digital frequency synthesizer.
- 47 24. The apparatus of claim 20, wherein the signal transmitter is an antenna or cable.
- 48 25. A method of transmitting a waveform reflecting a time-varying magnetic resonance radio
- 49 frequency signal comprising:
- 50 (a) providing data reflecting the time-varying magnetic resonance radio frequency signal to a
- 51 waveform generator;
- 52 (b) generating a waveform having a time-varying property based on the data reflecting the
- 53 time-varying magnetic resonance radio frequency signal using the waveform generator; and
- 54 (c) transmitting the waveform having the time-varying property to a magnetic resonance
- 55 scanner.
- 56 26. The method of claim 25, wherein the time-varying property is amplitude, frequency, or phase.
- 57 27. The method of claim 25, further comprising:
- 58 (d) storing data reflecting the time-varying MR RF signal.
- 59 28. The method of claim 25, further comprising:
- 60 (d) detecting the waveform having the time-varying property.

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